

BASIN WILDRYE

Leymus cinereus (Scribn. & Merr.) A. Love
plant symbol = LECI4

Contributed By: USDA NRCS Idaho State Office, Montana State Office, Aberdeen Plant Materials Center, Montana Plant Materials Center, & the National Plant Data Center; USDA ARS Forage & Range Laboratory



Hitchcock (1950)

Alternate Names

Giant wildrye, great basin wildrye, *Elymus cinereus*

Uses

Grazing/rangeland/hayland: Basin wildrye is generally not recommended for spring or summer utilization, because it has an elevated growing point and is easily damaged by overgrazing.

Basin wildrye is palatable to all classes of livestock and wildlife. It is a preferred feed for horses in spring and is considered a desirable feed for cattle, sheep, elk, deer, and antelope in the spring. It is

considered a desirable feed for cattle and horses in early summer, late fall, and winter. It reaches its peak production in protein per acre from mid-June through August. Protein levels can be as high as 20 percent and decrease to about 7 to 8 percent protein as it matures and cures.

This species produces large amounts of forage and can be used as standing winter forage. Leaving 10 to 12 inches of stubble height will help reduce grazing damage. It is generally not recommended for haying, because it is difficult to harvest above its natural growing point. Once harvested by grazing or cutting, it produces little regrowth.

Basin wildrye is ideal for providing wind protection in winter calving pastures. It holds its nutrient value well at maturity (7-8% protein) and can withstand heavy grazing and trampling in its dormant state. Its tall stature and stiff stems make this forage accessible in areas of deep snow.

Erosion control/reclamation: Basin wildrye is well adapted to stabilizing disturbed soils. It should not be planted with aggressive introduced grasses. It is very compatible with slower developing natives such as Snake River wheatgrass (*Elymus wawawaiensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), thickspike wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), streambank wheatgrass (*Elymus lanceolatus* ssp. *psammophilus*), western wheatgrass (*Pascopyrum smithii*), and needlegrass species (*Hesperostipa* spp. and *Nasella* spp.). Basin wildrye's drought tolerance, combined with its fibrous root system and fair seedling vigor, make it desirable for reclamation in areas receiving 8 to 20 inches annual precipitation. It is commonly used as a grass barrier to control wind erosion or blowing snow. It has also been planted on hilly cropland as a vegetative terrace for water erosion control.

Wildlife: Because basin wildrye is a tall upright bunchgrass, it is considered excellent cover habitat for small animals and birds, excellent nesting cover for upland birds, and excellent standing winter feed and cover for big game animals.

Status

Consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status, such as state noxious status and wetland indicator values.

Description

General: Grass Family (Poaceae). Basin wildrye is a large, coarse, robust, perennial bunchgrass,

sometimes with short rhizomes. It is a long-lived cool-season native with an extensive, deep, coarse, fibrous root system.

Basin wildrye has long leaf blades (15 to 25 inches) and flat wide (up to 3/4 inch) leaves with long pointed auricles. The reproductive stems are dense, stout, and strongly erect. Seed heads are 6 to 10 inches long. Basin wildrye clumps may reach 3 feet in diameter and stand 3 to 6 feet tall (10 feet under excellent soil and climate conditions). Growing points are 10 to 12 inches above the crown.

Basin wildrye has fair seedling vigor. It is one of the first grasses to initiate spring growth and it produces an abundance of basal leaf growth until the development of seed heads in mid-June to mid-July. Following the development of seed heads, basin wildrye produces very little additional basal leaf growth and rapidly becomes coarse and stemmy. Regrowth does not occur following seed production.

Distribution

It is native to the western Great Plains and Intermountain regions of the western United States. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Adaptation

Basin wildrye is very winter hardy and has a rather broad range of climatic adaptation. It can be found at elevations from 2000 up to 9000 feet. It grows best in areas with average annual precipitation of 8 inches to above 20 inches. 'Trailhead' seeded in areas with as low as 5 inches of rainfall has reproduced to populate areas around the original plots. In lower rainfall areas, basin wildrye grows in run-in areas, along gullies or watercourses, or near sites with high seasonal water tables. It does not tolerate areas with extended periods of inundation. It will tolerate short-term winter flooding. It is susceptible to leaf and stem rust in wetter climatic areas.

Basin wildrye has a broad soil texture adaptation, but it is not adapted to shallow soils. It is most common on deep soils with high water holding capacities.

It is tolerant of low to moderate levels (< 10 mmhos/cm³) of saline and (SAR < 15) sodic soil conditions and slightly acidic soils. Established stands of basin wildrye can tolerate long periods of drought, and it prefers cycles of wet winters and dry summers. It tolerates partial shading and wildfire if soil moisture is not too dry.

It does well as a pioneer plant and establishes seedlings in disturbed areas, such as recent road fills and areas disturbed by wildlife (ex. rodent diggings).

Species often associated with basin wildrye include the big sagebrush complex (*Artemisia tridentata*), juniper species (*Juniper* spp.), needlegrass species (*Hesperostipa* and *Nassella* spp.), bluebunch wheatgrass, Snake River wheatgrass, thickspike wheatgrass, streambank wheatgrass, Indian ricegrass (*Achnatherum hymenoides*), western wheatgrass (*Pascopyrum smithii*) and Idaho fescue (*Festuca idahoensis*).

Establishment

Planting: This species should be seeded with a disc or deep furrow drill at a depth of 1/4 to 3/4 inch on medium to fine-textured soils and 1 inch or less on coarse-textured soils. Single species seeding rate recommended for basin wildrye is 7 pounds Pure Live Seed (PLS) per acre or 21 PLS per square foot. If used as a component of a mix, adjust to percent of mix desired. For rangeland mixtures, basin wildrye should comprise approximately 10 to 20 percent of the seed mix or 1 to 2 pounds PLS.

For seeding mine lands and other harsh critical areas, the seeding rate should be doubled. When seeding is for a vegetative windbreak, vegetative terrace, or wildlife cover, it is recommended that 3.0 to 3.5 pounds PLS be seeded in 36 to 48-inch rows.

The best seeding results are obtained from seeding in very early spring on heavy to medium-textured soils and in late fall on medium to light-textured soils. Summer and late summer (July to mid September) seedings are not recommended. Seedling vigor is fair, and stands may take 2 to 5 years to fully establish.

Seed production stands may require weed control measures during establishment. Bromoxynil may be applied at the 3-4-leaf stage of grass for early suppression of young broadleaf weeds. Application of 2,4-D should not be made until plants have reached the 4-6-leaf stage. Mow above establishing seedlings when weeds are beginning to bloom will help to reduce weed seed development.

Grasshoppers and other insects may also damage new stands. Use of pesticides may be required. All herbicides and pesticides should be applied according to the label.

Management

Basin wildrye establishes slowly and new seedlings should not be grazed until at least late summer or fall

of the second growing season. Basin wildrye makes its initial growth in early spring and matures seed by late summer. It reproduces primarily by seed and tillers.

Basin wildrye is palatable to all classes of livestock and wildlife. New stands should not be grazed until plants are at least 10 inches tall. Overgrazing, especially in spring, severely damages basin wildrye, and stubble of at least 10 inches should remain following grazing.

Established stands can be grazed in late spring or fall (leave about 10 inches of stubble to protect plant health). Following grazing, little re-growth can be expected, even when the stand is irrigated. Basin wildrye is a low-maintenance plant requiring little additional treatment or care.

Environmental Concerns: Basin wildrye is long-lived and spreads primarily via seed distribution. It is not considered "weedy" or an invasive species, but can spread into adjoining vegetative communities under ideal climatic and environmental conditions. Most seedlings do not spread from original plantings. If they do spread, the rate is slow. Basin wildrye accessions with the same chromosome number (28 or 56) will cross with each other but are not noted for crossing with other native species or basin wildrye genotypes of a different chromosome number.

Seed Production

Seed production of basin wildrye has been very successful under cultivated conditions. Row spacing of 36 inches (seeding rate 3.5 pounds PLS per acre) to 48 inches (seeding rate 3.0 pounds PLS per acre) are recommended. Cultivation will be needed for weed control and to maintain row culture.

For seed production, basin wildrye benefits from low levels of fertilization based on soil tests. Apply approximately 30 pounds actual N per acre on dryland plantings and 60 to 80 pounds actual N per acre on irrigated plantings for optimum production. Seed fields are productive for at least five to seven years. Average production of 150 to 200 pounds per acre can be expected under dryland conditions in 14-inch plus rainfall areas. Average production of 300 to 400 pounds per acre can be expected under irrigated conditions. Direct combining, leaving 24 to 30 inches stubble (to reduce handling of leaves and stems), is the preferred method to harvest basin wildrye. The seed heads have moderate rates of shatter and require close scrutiny of maturing stands to determine optimum harvest date. Seed is generally harvested from mid-August to September. Seed must

be dried immediately after combining (12 percent bins / 15 percent sacks moisture content).

Cultivars, Improved and Selected Materials (and area of origin)

Foundation and registered seed is available through the appropriate state Crop Improvement Association or commercial sources to grow certified seed.

'Magnar' (*Leymus cinereus*) was originally collected by the Pullman, Washington, Plant Materials Center (PMC). It was selected by the Aberdeen, Idaho, PMC and released in 1979. It is a selection of vigorous plant types over several generations. It is adapted to the Northwest and Intermountain Regions of the Western United States where precipitation averages 8 inches or above. It has survived in plantings with 7 inches annual rainfall. It prefers deep clayey to loamy to sandy soils and can be found in weakly saline conditions. It is noted for blue foliage, fair seedling vigor and establishment, high forage production, good winter cover, fair winter forage, and ability to survive and thrive under very dry conditions. 'Magnar' is a 56-chromosome cultivar. Certified seed is available, and Breeder and Foundation seed is maintained by the Aberdeen PMC.

'Trailhead' (*Leymus cinereus*) was selected by the Bridger, Montana, PMC and released in 1991. The original collection site was near Roundup, Montana, in a sub-irrigated rangeland community. It is adapted to the Northern Great Plains and Intermountain Regions of the Western United States where precipitation averages 8 inches or above. It has survived in plantings with 5 inches annual rainfall. It was selected for its stand longevity and drought tolerance as compared to other basin wildrye accessions. It prefers deep clayey to loamy to sandy soils and tolerates weakly saline conditions. It is noted for green foliage, fair seedling vigor and establishment, high forage production, good winter cover, fair winter forage, and ability to survive and thrive under very dry conditions. 'Trailhead' is a 28-chromosome cultivar. Certified seed is available, and the Bridger PMC maintains Breeder and Foundation seed.

Washoe Germplasm basin wildrye (*Leymus cinereus*) is a Selected Class germplasm that was released in 2002. It was originally collected in Deer Lodge County, Montana near the old Washoe smelter stack south of Anaconda, Montana. Heavy metal and sulfide fallout from historic copper smelting emissions has elevated heavy metal levels and decreased soil pH in the area. At the collection site

arsenic, cadmium, copper, lead, and zinc levels range from moderate to high phytotoxic. Soil pH ranges from 4.6 to 5.6. Washoe Germplasm had better overall height, vigor, and survival compared to 'Magnar' and 'Trailhead' when tested in low pH and heavy metal contaminated soil. Bridger PMC maintains Generation (G) 0 and G1 seed.

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